OR22-2: Exposure to Hypoglycemia in Older Adults with Type 1 Diabetes: Baseline Characteristics Using Continuous Glucose Monitoring Data

Anders Carlson. *International Diabetes Center*

Anders L. Carlson, MD[1], Lauren Kanapka, MS[2], Kellee Miller, PhD[2], Andrew J. Ahmann, MS, MD[3], Naomi S. Chaytor, PhD[4], Steven Fox, MD[5], Lisa Kiblinger, NP, CDE[6], Davida F. Kruger, Masters[7], Carol Joan Levy, MD, CDE[8], Anne Peters, MD[9], Michael Roehrhoff Rickels, MD, MS[10], Maamoun Salam, MD[11], Viral Shah, MD[12], Laura Anne Young, MD, PhD[13], Richard Pratley, MD[14].
[1]International Diabetes Center, Minneapolis, MN , [2]Jaeb Center for Health Research, Tampa, FL, [3]Oregon Hlth and Sci Univ, Portland, OR, [4]Elson S. Floyd College of Medicine, Washington State University, Spokane, WA, [5]Keck School of Medicine of the University of Southern California, Los Angeles, CA, [6]Atlanta Diabetes Association, Atlanta, GA, [7]Henry Ford Health System, Grosse Pointe, MI, [8]Mount Sinai School of Medicine, New York, NY, [9]University of Southern California, Los Angeles, CA, [10]University of Pennsylvania, Bryn Mawr, PA, [11]Washington University School of Medicine, St. Louis, MO, [12]University of Colorado, Aurora, CO, [13]University of North Carolina, Pittsboro, NC, [14]Florida Hospital, Orlando, FL.

Objectives: There are limited data on time spent in hypoglycemia range among older adults (≥ 60 yrs of age) with type 1 diabetes (T1D). We analyzed blinded continuous glucose monitoring (CGM) data collected at baseline in a randomized trial assessing the effect of CGM on hypoglycemia in older adults with T1D.

Methods: Data from 203 older adults with T1D enrolled in the Wireless Innovations for Seniors with Diabetes Mellitus (WISDM) study at 22 sites in the United States were analyzed. Eligibility criteria for the trial included age ≥60 yrs, no use of real-time CGM in the 3 months prior to enrollment and HbA1c <10.0%. All participants wore a blinded Dexcom G4 CGM at baseline for up to 21 days to collect at least 240 hours of CGM data. Associations of demographic and clinical characteristics with CGM-measured glucose levels and variability were assessed using linear regression models.

Results: The analysis cohort included 203 participants; 52% female, median age of 68 years (IQR 65, 71), 93% non-Hispanic white and 53% used insulin pumps. Mean HbA1c was 7.5% (SD = 0.9%). Older adults spent a median of 5.0% of time <70 mg/dL (72 minutes per day) and 1.6% of time < 54 mg/dL (24 minutes per day). Impaired hypoglycemia awareness was associated with greater amounts of time spent with glucose levels < 70 and < 54 mg/dL, with a median % time <70 mg/dL of 7% vs. 5% (101 vs. 72 minutes per day, p=0.01) and median % time <54 mg/dL of 3% vs. 1% (43 vs. 14 minutes per day, p=0.008) in those with reduced awareness vs. those who were aware or uncertain. Participants spent a mean 56% of time in target glucose range of 70 to 180 mg/dL (13.4 hours per day), a median 35% of time above 180 mg/dL (8.4 hours per day), and a median 12% of time above 250 mg/dL (2.8 hours per day). Compared with participants who reported a status of "Employed" or "Unemployed", participants reporting an employment status of "Retired" spent more time in target glucose range (p=0.003) and less time above 180 mg/dL (p=0.02) and above 250 mg/dL (p<0.001). Lower total daily insulin per kg was associated with having a higher percentage of glucose levels in range 70-180 mg/dL (p=0.02), a lower coefficient of variation (CV) and a lower percentage of glucose levels above 180 mg/dL (p=0.04) and above 250 mg/dL (p=0.008). Overall participants had a median CV of 42% with a higher CV observed among participants diagnosed at age <18 vs. adult onset (p=0.02).

Conclusions: On review of blinded CGM data, older adults (≥60 yrs of age) with T1D spend over an hour a day in the hypoglycemic range and >100 minutes per day among those with impaired hypoglycemia awareness. Interventions to improve time in range and reduce biochemical hypoglycemia are needed to reduce the risk of severe hypoglycemia in this age group.

Presentation Date: Monday, March 25
Presentation Time: 11 a.m. – 12:30 p.m.
Location: Room 288